

propagation model currently used for 450 MHz in the Domestic Public Land Mobile Radio Services. These are somewhat lower than the limits proposed by AT&T in the draft rules it submitted. Our reason in adopting these limits (and thereby reducing maximum cell size) is to reduce the likelihood of intersystem interference and thus facilitate the coordinated use of frequencies.

90. For the purpose of establishing the limits of reliable service and performing interference studies, we adopt an interim policy. It is anticipated that the Commission will develop propagation models specifically for the 800 MHz frequency band at a future date. For the present, procedures used for 450 MHz facilities will be used until 800 MHz propagation models are developed. For now, applicants must use, except as otherwise noted in our Rules, procedures consistent with Section 22.504 and F.C.C. Report No. R-6406, "Technical Factors Affecting the Assignment of Facilities In the Domestic Public Land Mobile Radio Service," by Roger B. Carey.

91. The effective radiated power of mobile units is limited to 7 watts. All mobile units must be initially capable of communicating on the 666 channels of Blocks A & B specified in the Rules.

92. *Compatibility standards.* In response to our *Notice*, in which we expressed the intent to leave the development of detailed specifications to industry groups or voluntary organizations, we received a draft of compatibility specifications from the Ad Hoc Engineering Committee and the Land Mobile Communications Section of the Electronic Industry Association's (EIA) Communications Division. The EIA working paper is based on the developmental systems of Illinois Bell and American Radio Telephone Service.

93. Although the EIA draft was only intended as a working paper, we have examined the mobile station and base station compatibility standards embodied in it and we find that they are an appropriate means of reaching compatible intersystem operation. Accordingly, we are adopting the EIA working paper⁷⁸ as a compatibility specifications standard with certain modifications.⁷⁹ We shall require all mobile, portable, and base stations, at this time, to conform to the compatibility specifications adopted in this proceeding.⁸⁰

94. *Other technical matters.* We shall continue to require that cellular systems be interconnected to the telephone network. As we have discussed above, we do not at this time prescribe a particular type of interconnection.

95. We do not intend to establish standards for grade of service. A

⁷⁸ See Section 22.915 of the Rules.

⁷⁹ See Sections 22.906 and 22.907 of the Rules.

⁸⁰ Conformity to the compatibility specifications adopted by the Commission shall be required for type acceptance of a mobile or portable unit for use in the 800 MHz band under Part 22. Conformity to the compatibility specifications for base station equipment shall be required of all applicants for regular authorization.

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quality "comparable to landline" has been demonstrated as possible over the course of this proceeding. It does not appear necessary or desirable, however, for us to take the next step and impose a particular grade of service on cellular service consumers regardless of their willingness to pay for it. Setting quality standards could also have the detrimental effect of denying service to economically marginal markets. We favor allowing the interplay of market forces to determine the grade of service delivered. Some carriers may experiment with tariffs and service algorithms that give consumers a choice of quality levels at different charges.

4. Regulatory Structure.

96. We are establishing a regulatory structure under which a cellular system operator, once authorized, will have considerable freedom to adapt its system to growing or changing demand. Flexibility to adapt to change is inherent in the cellular concept and an approach requiring any more paperwork or prior approval than is absolutely essential might destroy that flexibility. Accordingly, once a cellular service area has been established, the system operator will be able to modify its system without substantial oversight, as long as it serves the same area. Thus, the key to our regulatory structure is the geographic service area of a cellular system.

97. *Cellular geographic service area.* The cellular geographic service area (CGSA) is the area defined by the applicant as the area it intends to serve. A licensee must, from initial operation onward, serve at least 75% of the CGSA. At the time of initial application, the applicant's proposed reliable service contours, as defined in the rules, must cover at least 75% of its proposed CGSA. Any change in a licensee's facilities must continue to have 75% coverage within its CGSA. An application proposing to change the boundaries of a CGSA in any way will be considered a "major application."

98. *Change of facilities within CGSA.* A permittee or licensee may wish at some point to modify transmitter locations or add more transmitter locations. If the proposed change in the operator's facilities does not result in the extension of reliable service contours beyond the existing CGSA, the change will be deemed a "minor application" not subject to public notice or petitions to deny. We believe that such changes need not be considered major as contemplated by the Communications Act. It is important, however, that changes such as these receive prior authorization from the Commission because they involve the construction of facilities at locations not previously authorized. Requiring prior authorization will ensure that any new antenna structure is recorded in our records and cleared with the Federal Aviation Administration if necessary.

99. *Permissive changes.* A licensee will be authorized the use of a full Block (A or B) of frequencies throughout its CGSA. Thus, no prior authorization or modification of license will be required for a change in

the use of channels included in that Block at any or all of the licensee's locations. Licensees must, however, coordinate any frequency changes with other cellular systems, so as to avoid interference. In addition, a licensee must file a written notification of any permissive change with the Commission to ensure the continued accuracy of our records.

100. *Mutual exclusivity.* A grant authorizing a cellular system to operate in a given frequency Block within a specified CGSA will be exclusive. Therefore, two or more applications using the same frequency Block and proposing CGSAs that will overlap with each other will be considered mutually exclusive. Thus, if more than two applicants apply in the same central city, their applications will be designated for comparative evaluation if their applications are filed within the cutoff period specified in the Commission's Rules. After five years, when the separate allocation expires, if two applicants file for overlapping areas they will not be considered mutually exclusive if one applicant can be assigned Block A and the other one Block B; but if either Block is already assigned, with only one Block available, the applications will be considered mutually exclusive.

101. *Procedural dates.* The public notice and cutoff periods for major applications (new stations and changes in CGSA) will be those generally applicable under Part 22.

102. *Applications.* All applications for new stations, changes in facilities of existing stations, and changes in cellular geographic service area shall be filed on FCC Form 401. Certain exhibits will be required in conjunction with these application forms in connection with cellular applications. These mandatory exhibits are described in the Rules.

5. Resale of Cellular Services

103. In our *Notice* we inquired as to the structure and arrangement under which the reselling of cellular service might develop. We also inquired as to whether resale is economically feasible, whether resale is a competitive alternative to other non-cellular services and whether we should impose any restrictions or requirements regarding resale.

104. In our view, the most important issue involving cellular resale is whether cellular system tariffs will restrict resale. In our *Resale and Shared Use* decision,⁸¹ we held to be unlawful provisions in carrier tariffs which had the effect of precluding resale of private line services. We took this action because we recognized that resale was an effective deterrent to price discrimination among cross-elastic services and, in any event, these tariff discriminations were unable to meet the "just and reasonable" standard of the Act.⁸² Using an analogous

⁸¹ 60 FCC 2d 261 (1976), *recon. granted in part*, 62 FCC 2d 588 (1977), *aff'd sub nom. AT&T v. FCC*, 572 F. 2d 17 (2d Cir.), *cert. denied*, 439 U.S. 875 (1978).

⁸² See 47 U.S.C. Sections 201(), 202(), 205(a).

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rationale, we recently ordered that similar tariff provisions be eliminated from interstate WATS and MTS tariffs.⁸³

105. We are not certain that true resale of cellular service will develop. We continue to believe, however, that restriction of cellular resale is contrary to the public interest for reasons similar to those set forth in *Resale and Shared Use of Common Carrier Public Switched Network Services*. Therefore, pursuant to our licensing authority set forth in Section 309 of the Communications Act⁸⁴ we will condition radio licenses awarded to system operators such that no restrictions on resale and shared use of cellular services will be permitted.⁸⁵

106. As mentioned earlier, a variation of true resale of service is being developed by AT&T. Under this plan, an AT&T cellular system would operate as a wholesale carrier, making system capacity available to retail distribution entities, including its own distribution arm, for sale to the ultimate users of cellular service. Separate books of account would be maintained between the licensee and retail functions.⁸⁶

107. This wholesale-retailer arrangement may result in the evolution of a highly competitive secondary market for distribution of cellular service, while only two carriers compete in the provision of cellular facilities. It is not clear at this time that such an arrangement is truly resale, or is instead an intercarrier service offering or an agency arrangement. Nevertheless, we do not want to frustrate the development of innovative methods of service distribution and we encourage the evolution of truly competitive markets. Of course, until the workings of this arrangement are clear, we cannot say with any certainty that it is likely to lead to a greater diversity of service offerings or lower prices. However, we shall require that AT&T and its underlying cellular affiliate provide system capacity to non-affiliated retailers or resellers on a non-discriminatory basis and on the same terms and conditions as its own distribution arm.

6. Services

108. The final decision in Docket No. 18262 imposed no restrictions on cellular system provision of dispatch services, except for fleet-call dispatch. We concluded that if cellular systems could, through natural economies, provide lower-priced dispatch services, the public should not be denied that benefit. *Second Report and Order, supra*, 46 FCC 2d at 761. As we discussed earlier, the record in this proceeding supports our reaffirming our prior conclusion as far as general dispatch services are concerned. See paragraphs, 33-36, *supra*.⁸⁷ And as discussed above, we

⁸³ *Regulatory Policies Concerning Resale and Shared Use of Common Carrier Domestic Public Switched Network Services*, CC Docket No. 80-44, 83 FCC 2d 167 (1980).

⁸⁴ 47 U.S.C. Section 309.

⁸⁵ The mobile units of the customers of a reseller will be considered to operate under the "blanket" mobile license of the underlying carrier.

⁸⁶ See AT&T Comments, pp. 58-66.

⁸⁷ The only technical arguments against non-fleet call dispatch are that it may increase

cannot agree that a dispatch service restriction on wireline carriers is called for. The ability to resell common carrier services coupled with the other conditions we have imposed on wireline participation gives us confidence that the ability of wireline carriers to cross-subsidize will be greatly minimized.

109. In Docket No. 18262, we prohibited cellular systems from offering fleet-call dispatch service⁸⁸ because of technical evidence indicating that the widespread use of such service would substantially reduce the efficiency of the cellular system. *Id.* We reaffirmed this decision on reconsideration. *Memorandum Opinion and Order, supra*, 51 FCC 2d at 952, n. 16.

110. In our *Notice*, we sought comment on whether there have been technological developments which would tend to lessen the degree of spectrum inefficiency that might result if licensees were allowed to provide fleet-call dispatch service. 78 F.C.C. 2d at 996. In response to our *Notice*, arguments have been raised again in this proceeding against fleet-call dispatch service, generally in the name of spectrum efficiency. Fleet calls are said to be less efficient on cellular systems than on conventional mobile systems because (1) the mobile units cannot be signaled simultaneously over the control channels, necessitating a time-consuming serial signaling technique, while a conventional mobile system would use a common calling technique, and (2) because the mobile units would each require a separate voice channel, while a conventional system could operate over a single channel. On the other hand, NTIA, in an appendix to its comments, questions whether cellular systems will be as inefficient as it has been alleged in providing fleet-call service, and notes that there may be means of diminishing the degree of spectrum inefficiency. NTIA also contends that even if inefficient, fleet-call should not be prohibited, but rather the market should determine whether it is a viable offering.

111. Since the time we terminated Docket No. 18262 we have added considerably to our understanding of cellular technology, as well as rapid signalling techniques. This knowledge has not, however, adequately prepared us to decide today whether we should extend our prohibition on fleet calling. To the contrary, it has caused the staff to become sharply divided on this issue. Specifically, there is disagreement over the extent, if any, to which cellular fleet calling is spectrally inefficient, and whether there are other considerations which warrant us freeing cellular operators of any fleet-call service restrictions notwithstanding any spectrum inefficiencies. The record in this

system loading and require a complex service algorithm. These do not justify a prohibition. We do not intend to prescribe system loading or the software by which the cellular switch operates either for mobile telephone or for dispatch. These matters are left to the carriers to resolve in the context of the particular demands in their service areas.

⁸⁸ Fleet-call dispatch service is a variety of dispatch service in which a dispatcher is able to establish simultaneous communications with multiple mobile units.

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proceeding is not adequate to permit us to resolve this conflict. As a result, we believe that it is appropriate to issue a *Further Notice of Proposed Rulemaking* regarding our treatment of fleet-call offerings by cellular operators. In our view, this approach is necessary in order to obtain additional information required to make an informed decision on this matter. We are therefore instructing the staff to prepare a *Notice* addressing the questions of fleet-call dispatch.⁸⁹ We will continue our prohibition against cellular systems offering fleet-call dispatch service pending resolution of that rulemaking.

D. Conclusion

112. We believe we have in this *Report and Order* established a framework within which the needs of the public for mobile communications can be met for the foreseeable future with a minimum of regulation. Cellular systems should be capable of adapting to changing customer demands and advancing technology. Licensees in this service will have the responsibility to adapt to the changing market environment.

113. Accordingly, IT IS ORDERED, pursuant to 47 U.S.C. 154(i) and 303(r), That Title 47 of the Code of Federal Regulations IS AMENDED as described in Appendix C. These amendments shall become EFFECTIVE 30 days after publication of this *Order* in the Federal Register. We will begin accepting applications filed under the new Subpart K of Part 22 five months after the effective date of these amendments. The reporting requirements included herein are adopted subject to clearance by the Office of Management and Budget.

114. IT IS FURTHER ORDERED, That the Bureau has the authority, when designating applications for hearing, to specify that any exceptions to a decision made by an Administrative Law Judge be made directly to the Commission.

115. IT IS FURTHER ORDERED, That this proceeding IS TERMINATED.

FEDERAL COMMUNICATIONS COMMISSION,
WILLIAM J. TRICARICO, *Secretary*.

APPENDIX A: SUMMARY OF COMMENTS

Able Communications (Able)

Able, a small radio common carrier (RCC), comments that the Commission should carefully consider the effect its regulations for cellular systems will have on small RCCs. Small carriers have not had enough channels in the UHF and VHF bands to plan for growth or operate sophisticated, automated mobile systems.

⁸⁹ We note that our decision to seek further comment, rather than to resolve this issue today, should not result in any serious delay in the development of cellular plans by prospective cellular applicants. With a relatively brief pleading cycle, we would expect to be able to resolve the fleet-call question and to terminate our further rulemaking proceeding before many cellular applications are processed.

Federal Communications Commission Reports

Cellular systems, especially in small markets, will be in competition not only with conventional common carrier mobile telephone systems, but also with private two-way mobile systems such as community repeaters and 800 MHz trunked systems. These private systems are not as efficient as common carrier systems; they are set up to benefit radio equipment manufacturers, with emphasis on equipment sales rather than public service and spectrum conservation.

Small carriers must also compete with AT&T and other large carriers, both of which can subsidize their operations in small markets with revenues from their semi-monopolistic systems in large cities. If small carriers are placed at a disadvantage by the FCC rules, they will not be able to persuade financial institutions to lend them capital for entry into the cellular market.

Able asks that the Commission: require AT&T to establish fully separated subsidiaries for cellular service; limit the number of cellular systems a carrier can operate; and prohibit rate averaging. The Commission should make it possible for small carriers to establish cellular-compatible systems designed to serve hundreds, rather than thousands, of mobile telephones, with a minimum of investment.

Association of Maximum Service Telecasters, Inc. (AMST)

AMST, an organization of television broadcasters, supports the prompt adoption of rules for the implementation of cellular service. The existing allocations for private and common carrier mobile service are inadequate to meet the demand; high capacity, spectrum-efficient cellular systems can satisfy the demand for service without the need for further allocations. Private land mobile users, particularly licensees of small systems, can be expected to shift to cellular systems. The Commission would ultimately be able to shift users from lower frequencies to either 800 MHz private systems or cellular systems. This would eventually permit an end to the sharing of UHF TV channels 14-20 (470-512 MHz).

The Commission should not establish policies of monopoly or unlimited entry in the cellular field; a limited competition policy (e.g., two systems per market) would permit the design of spectrum-efficient systems but avoid the legal problems inherent in establishing monopolies.

Sufficient spectrum should be allocated to meet the needs of the new cellular service for the foreseeable future, so that a major reallocation will not be required in 10 or 15 years. Cellular systems will be able to meet many of the long-term requirements of private and common carrier land mobile users; therefore the Commission should not be unduly concerned by claims that the 800 MHz reserve spectrum should be used for private systems. Accordingly, AMST states, the Commission should allocate the 20 MHz of reserve bands for cellular unless it is certain the foreseeable demand can be met within the present 40 MHz allocation. AMST supports the reservation of 20 MHz within the cellular allocation for wireline carriers.

The Commission should mandate nationwide compatibility and adopt technical standards requiring efficient spectrum use, including a requirement that mobile units be capable of operating on all channels and in all systems, and standardized channel bandwidth. AMST believes preemption of state regulation will be necessary with respect to eligibility, technical standards, and interconnection, but not with respect to local rates, terms of service, or installation and maintenance. The Commission should not permit issues such as mobile-satellite service or competition with the wireline network to delay the prompt adoption of rules for cellular service.

American Medical Association (AMA)

The AMA states that the availability of cellular mobile telephone service can be of benefit to physicians, other medical personnel, and their patients. It encourages the implementation of final rules as quickly as possible.

Central Com (API)

API states systems with flexibility in areas where API does not degree, although cellular systems

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ARTS believes competing applications; competing applications past performance growth plans;

ARTS favors licensees and suggests that Inquiry to the

Central Committee of Telecommunications of the American Petroleum Institute (API)

API states that most petroleum and natural gas producers use their own private radio systems rather than common carrier (or multiple-user private) systems for reasons of flexibility and reliability. The oil and gas producers require extensive mobile facilities in areas where adequate common carrier facilities are unlikely to be available. Accordingly, API does not expect the oil or gas industries to use cellular systems to any significant degree, although other private radio and common carrier mobile users may turn to cellular systems where available.

The Commission should open the cellular market to reasonable competition, with provision for two or three suppliers within any market. This should be achieved within no more than a 40 MHz allocation; API opposes use of the reserve spectrum for cellular systems unless it is shown to be absolutely necessary. The Commission should carefully review the channel spacing to be used; 25 kHz channels would be even more efficient than 30 kHz.

API supports the participation of wireline carriers in the cellular market through separate subsidiaries; wireline carriers should be restricted to a specific percentage of the market, however, and should not be permitted to manufacture base station or mobile equipment. Equipment charges should be unbundled from transmission service, and maintenance of mobile equipment should be at the subscriber's option.

The Commission should preempt state regulation to the degree necessary to insure uniform standards for compatibility, market entry, and a competitive market structure. API opposes the use of auctions and lotteries for selection of licensees.

American Radio Telephone Service, Inc. (ARTS)

ARTS is a radio common carrier and the permittee of a developmental cellular system in the Baltimore-Washington area. ARTS believes the relevant markets in which there will be significant substitutability with cellular service are the two-way mobile and portable public telephone markets. There is little likelihood that cellular systems will compete with wireline exchange telephone service for reasons of capacity and cost. In addition, there is no reason why cellular market areas should have any relationship to wireline exchange area boundaries.

The Commission should allow only one cellular system to be established in any market, in order to achieve maximum channel utilization at minimum cost. There should not be separate, exclusive allocations for wireline and radio common carriers; RCCs are at least as likely to provide adequate service as wireline companies. ARTS opposes the unlimited entry alternative set out by the Commission for reasons of economy and efficiency.

ARTS suggests that for the first three years after adoption of rules, entry be restricted to presently licensed and certified DPLMRS operators; during that period, in addition, no applicant (or commonly controlled applicants) would be eligible to serve more than five of the thirty largest, and five smaller, markets. Wireline companies should be permitted to offer cellular service only through separately managed subsidiaries. Manufacturers of mobile radio equipment should not be eligible to be licensees.

ARTS believes that with these restrictions there will be few markets in which competing applications are filed. In the few exceptional cases, a choice between competing applicants should be made on the basis of their response to a questionnaire on past performance as a DPLMRS carrier, present financial and managerial strength, and growth plans; ARTS opposes the use of a lottery.

ARTS favors a requirement that cellular licensees permit resale of service by existing licensees and certified DPLMRS carriers. With regard to provision of equipment, ARTS suggests that the Commission extend the principles adopted in the Second Computer Inquiry to the cellular market. ARTS asks that AT&T be required to license technology

developed at ratepayer expense, at reasonable fees. There should be no restriction on the offering of fleet-call or conference-call service on cellular systems.

With regard to regulatory jurisdiction, ARTS believes the FCC should not attempt to preempt state jurisdiction over rates and earnings.

American Telephone & Telegraph Company (AT&T)

AT&T urges the Commission to adopt a split-frequency proposal for cellular service: 20 MHz each for wireline and non-wireline carriers, and 20 MHz for system expansion. While this proposal is not a panacea, it is an accommodation of many Commission concerns. The AT&T proposal's benefits are: it will permit rapid introduction of competing cellular services; it will result in development of a high-quality nationwide cellular service; it entails competition both in the provision of cellular facilities and in the distribution of service to the public by multiple resale entities; it offers an alternative to the comparative hearing process; and it ameliorates the concern of the Court of Appeals regarding the competitive effect of participation of wireline telephone companies. In formulating its policies, the Commission should consider the benefits of wireline participation, such as technical expertise, availability of resources, and nationwide compatibility. AT&T is in a unique position to provide cellular service. Indeed, without the resources and technical expertise of AT&T, it is unlikely that cellular systems will be implemented on other than a very narrow scale in the near term.

The primary services with which cellular systems will compete are conventional mobile and private dispatch. Cellular will relieve congestion in the conventional mobile field and eventually replace that service. The immediate need for cellular service is in large metropolitan areas, where the immediate demand will exceed 100,000 users. The initial delay in filling this demand will be the development of a sufficient supply of mobile units. Cellular technology can be expected to displace some dispatch systems using conventional techniques and will also create new demands for dispatch services. Using cellular for dispatch service will relieve frequency congestion in existing dispatch bands. In addition, the cellular mobile station may be used interchangeably as a mobile telephone or dispatch station.

The Commission correctly assesses that for reasons of price and use, cellular will not be an effective substitute for wireline telephone exchange service. The cross-elastic potential of cellular service on exchange service in major markets is minimal. In rural areas, the situation may be otherwise. The mobile unit for cellular service is significantly more expensive than a landline telephone instrument. In addition, rates for wireline telephone service are likely to remain lower than cellular service due to technological innovation. There is also a capacity limit due to cell size requirements. In summary, cost and usage limitations will make cellular/wireline cross-elasticity extremely limited.

AT&T concurs in the entry of two systems per market, but a 20 MHz allocation per system is insufficient, because of severe cost and capacity penalties suffered at that level. Unlimited entry is opposed because insufficient frequencies will be available to make systems viable. In addition, unlimited entry would be effectively an auction of frequencies, which is contrary to the Act. An unlimited entry approach which included stringent threshold criteria, while limiting the number of entrants, would result in delay because of controversy over the criteria.

The Commission should not place limits on the role of wireline carriers in providing cellular service. Since cross-elasticity with telephone exchange service is extremely limited, a wireline carrier would have no incentive to limit cellular growth, and it would not be logical for AT&T to restrict the supply of cellular technology, since it has advocated and invested in the technology for so long. In addition, the authorization of two systems in a market would make it unlikely that one system operator would seek to restrain its own technological growth. The FCC has previously stated that wireline carriers are the only entities capable of providing cellular with nationwide compatibility.

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In addition, Bell System participation in cellular is essential if AT&T is to participate in development of nationwide standards.

AT&T believes that limitations on the number of licenses a single entity might acquire would have an inhibiting effect on technological development since no entity would be inclined to invest heavily in a service in which it is artificially constrained. Such a restriction would severely slow cellular development and encourage the development of cellular technology from foreign sources.

The Commission should establish threshold qualifications for cellular applicants. AT&T proposes that an applicant be required to show: that it is financially qualified to provide cellular service; that it has access to technical expertise in radio propagation and engineering, in design of cellular system control algorithms, in building and structural engineering, and in switching, transmission, and traffic engineering; and that it can construct and begin operating a commercial cellular system within three years.

AT&T suggests that all entities, including cellular licensees, should be permitted to supply and maintain mobile units, in view of the competitive market that is expected to develop. Whether mobile units are tariffed or not should be determined by the states. Licensees should also be permitted to manufacture base station equipment and mobile units. AT&T opposes the required sharing of technology. Such a requirement is unnecessary in light of the *Western Electric* consent decree, would inhibit mutual arrangements among manufacturers, would provide advantages to foreign manufacturers which are not reciprocated, and would diminish incentives to undertake similar efforts in the future.

Cellular systems should be permitted to offer fleet-call dispatch service, if the design of a particular system is appropriate for the rendition of such service. This would permit a subscriber to have both mobile telephone and fleet-call dispatch service with only one mobile transceiver being needed. To prohibit fleet-call dispatch would discourage innovation and competition.

AT&T proposes a structure for resale of cellular service whereby an underlying cellular carrier would offer system capacity to retail entities at non-discriminatory rates for resale to end users. The resellers might then repackage or enhance this capacity and offer a customized full-service offering including answering service, provision of the mobile unit or other options. Regulation of resellers might be lessened—for example, not requiring resellers to demonstrate financial or technical expertise.

In view of significant changes since 1975, AT&T questions the necessity of establishing a separate cellular subsidiary. Resale entities, under whatever market structure, could include existing WCCs and RCCs and a separate distribution division of the underlying carrier. That distribution division would maintain books of account separate from those of the underlying carrier and would be treated by the underlying carrier on the same basis as if it were an independent resale entity. Cellular development would be inhibited if the underlying carrier were prohibited from retailing cellular services.

AT&T has rigorously recorded all cellular development costs, including (1) Bell Labs applied research; (2) Western Electric developmental costs to be recouped through the resale of cellular equipment; and (3) system engineering costs associated with the support of planning efforts.

AT&T opposes FCC preemption of regulatory power over entry into the cellular market. Even if legal under the Act, preemption of entry to achieve nationwide compatibility is unnecessary, would lead to protracted litigation, and would create uncertainty delaying cellular development. In any event, FCC power to preempt is highly questionable.

In response to the Commission's concern about the treatment of competing applications, AT&T suggests that a streamlined comparative hearing would be most appropriate. The comparative process should include factors such as the nature and extent of the

proposed service, facilities, maintenance, personnel, practices, the areas to be served, and the need for the service in the proposed area. Specific technical skills should also be weighed. Diversification criteria are unnecessary and inappropriate, because diversification is premised on first amendment concerns and should not apply to common carriers, as they do not control the content of communications.

AT&T opposes the use of auctions or lotteries for the selection of licensees. These techniques are of questionable legality, and their use could, therefore, substantially delay cellular implementation. Even if legal, a lottery between "equal" applicants could result in slow decisionmaking because of litigation over whether equality exists. AT&T instead favors decisions between applicants made on the basis of information submitted with the applications, briefs, and oral arguments. Furthermore, the separate allocations for wireline and non-wireline carriers proposed by AT&T should substantially lessen the need for comparative hearings.

The technical standards established by the Commission should not unreasonably limit the discretion of system designers. AT&T has submitted draft rules to the Commission embodying its recommendations. The FCC should adopt minimum technical standards, as proposed in the NOI/NPRM. It is necessary, however, that the proposed systems provide an acceptable level of coverage and system capacity. AT&T agrees that 30 kHz channel spacing is acceptable. Interconnection between cellular systems and the telephone network would, under AT&T's proposal, be made through a standard interface at a local serving wire center.

Separate setup (signaling) channels should be designated for each of the two (wireline and non-wireline) carriers in an area. Direct competition would be lessened, and system complexity increased, if the carriers were required to share setup channels. Each of the two groups of 21 setup channels should be continuous, and within the same band as the associated voice channels, although separate from the voice channels themselves. AT&T makes specific recommendations for the location of the setup channels, but states that the actual location would be somewhat flexible. The location depends upon the particular frequency allocations. To allow for maximum flexibility and compatibility between 40 MHz and 60 MHz units, AT&T recommends that the frequency bands presently allocated be shifted by 1 MHz, so as to be centered between equal reserve bands for expansion, and the setup channels be located at the center of the allocations.

Since a 60 MHz, 1000-channel mobile station has not been demonstrated, and preliminary estimates indicate that a 1000-channel unit would cost ten percent more than the current 666-channel unit, any requirement to use only 1000-channel mobile units could increase costs and delay the availability of cellular service. AT&T proposes channel assignment whereby the 666-channel unit would operate on 500 channels of one carrier and 166 channels of a second.

AT&T supports the development of interface parameters by voluntary standard-making groups such as the Electronic Industries Association. The Office of Science and Technology should be given authority to adopt these industry-developed standards as a basis for type acceptance and certification; this would obviate the need for inclusion of compatibility specifications in the Rules.

AT&T urges the Commission to allocate separate blocks of frequencies that will be specified by applicants. This would assist in prior frequency coordination. System planners must know at the outset the available frequency assignments to make the best use of base station radio equipment and to efficiently engineer the cell sites. AT&T also believes that separate frequency allocations for wireline and non-wireline carriers are essential for the establishment of nationwide compatibility. Wireline carriers, given a separate allocation, would be able to accomplish frequency coordination, exchange billing information, provide centralized directory service, and implement nationwide service.

AT&T urges the Commission to allocate 20 MHz of reserve spectrum for expansion of cellular systems. The costs for two 30 MHz systems would be significantly lower than for

two 20 MHz systems. Mature systems with smaller frequency allocations have higher costs per subscriber because the saturation point occurs much earlier with a reduced allocation. Once saturation is reached for a given bandwidth, cell additions are demanded at a faster rate for systems with smaller frequency assignments. AT&T compares its projections of the cost of cellular service to the subscriber based on various allocations (including a constant cost for the mobile unit), concluding that the subscriber's monthly bill would be 18% higher for a 20 MHz system than for a 30 MHz system.

The cellular market demand projected by AT&T is 1,500,000 subscribers in major markets immediately. This projection is based on the results of the Market Service Test in its Chicago developmental system (12 percent of businesses selected at random subscribed). The demand in markets such as New York or Los Angeles is likely to be such as to require cell-splitting or additional allocations within the first two years of operation; to provide for immediate expansion without the expense of cell-splitting, AT&T urges that more than 20 MHz be made available at that time. Other systems in smaller geographic areas would require the additional spectrum more slowly.

AT&T believes that cellular systems, as currently implemented, are inherently flexible enough to incorporate technological innovations through graceful evolution, and specific FCC rules are not required in this area. If complete conversion to, for example, digital technology is desired, it would proceed at whatever pace is appropriate, considering availability of equipment, capital investment, and user acceptance.

Big Rock Communications (Big Rock)

Big Rock, an operator of a Specialized Mobile Radio system (800 MHz trunked system), states that if dispatch communications are permitted on cellular systems, the competition cellular systems would bring would be disastrous. Permitting dispatch service will cause owners of trunked systems to lose millions of dollars.

Broad Com, Inc. (Broad Com)

Broad Com submitted a proposal and a transcript of a presentation entitled, "Cellular Radio and Spectrum Management." Broad Com's alternative proposal, "SYNAPZ," is described in the text; here will be summarized Broad Com's specific responses to the NOI/NPRM.

Broad Com believes cellular systems will be threatened by their cross-elasticity with wireline exchange telephone service and by the competition for a dwindling supply of spectrum. All companies, including wireline carriers, should be entitled to participate in the cellular market. Wireline companies should not be permitted to use their wireline plant in providing cellular service, however. There should be provision for up to two carriers per market, one of which must be a non-wireline entity with ties to the local community.

Wireline companies should be placed under appropriate restrictions to prevent cross-subsidization from exchange service. Further, there should be limits on the number of markets any cellular operator should be permitted to enter.

Because of the limited amount of spectrum that will be available for the expansion of cellular systems, and the likelihood that there may be a strong consumer demand for cellular service, the Commission should establish minimum frequency re-use standards in order to insure the most efficient use of the allocated spectrum.

Central Telephone & Utilities Corporation (Centel)

Centel, through its subsidiaries, is a provider of local wireline telephone exchange service in a number of areas. Centel believes that the relevant market in which cellular radio will compete is very large. While initially cellular technology will compete primarily with existing two-way mobile radio systems, there will be increasing cross-elasticity with basic telephone service. This will take place more broadly than on a local

or regional basis. The market ultimately may be identical to the nationwide telephone network.

In determining which and how many entities should be entitled to provide cellular service, the Commission should focus on the ultimate benefit to the consumer. It would not be in the public interest to exclude telephone companies from offering cellular service in their wireline exchange areas, because of their demonstrated viability, financial resources, stability, and expertise. There should instead be a presumption that qualified telephone companies will be among the best entities to provide cellular service. There can be adequate safeguards against the expansion of monopoly power without excluding wireline companies from the market. Centel does not generally favor separate subsidiary requirements, however. Resale may encourage competition and allow improvement to service, if it is in fact viable.

Centel believes that cellular service, because it may have some monopoly characteristics and it is likely to be somewhat cross-elastic with basic telephone service, should be regulated. Centel approves of the proposal to preempt state jurisdiction over entry and technical standards; the other aspects of cellular service should remain subject to local control at this time.

The Commission should establish responsible entry criteria, especially for financial qualifications. Choosing between qualified competing applicants should not be by chance, however; if the Commission does not wish to hold comparative hearings, perhaps it should refer such matters to local regulatory authorities.

Interconnection and intersystem coordination must be carefully considered. For example, it may be necessary to provide for access charges and negotiated ENFIA-type rates for full interconnection. There must be procedures for determining how to handle calls made by itinerant mobiles and by mobiles that are subscribers to competing carriers in the same area.

With regard to terminal equipment, the Commission should extend its policies adopted in the Second Computer Inquiry and in Part 68. Cellular mobile equipment should be deregulated to the same extent as customer premises equipment generally. There should be standards and a registration program to insure a high level of quality and protection of the network. Manufacturers of cellular terminal equipment should not otherwise be restricted.

Chicago Communications Services, Inc. (Chicago Com)

Chicago Com is a radio common carrier and has a half interest in a Specialized Mobile Radio system. It opposes any liberalization of the present prohibition on the rendition of fleet-call dispatch service by cellular systems. Fleet calling over a cellular system is undesirable because it inherently uses frequencies inefficiently. Furthermore, since wireline telephone companies will likely be the main providers of cellular service, allowing cellular operators to provide fleet calling will merely extend their already enormous advantage.

Resale of cellular service may be an effective regulator of what would otherwise be a monopoly. One scenario for resale would include bulk sales of excess system capacity, with the reseller guaranteeing payment and thereby taking on a degree of entrepreneurial risk. Resale should be of a type that can be freed from most regulatory constraints.

Communications Workers of America (CWA)

CWA, a labor union representing many AT&T employees, commented that AT&T must be allowed to compete in the cellular market without artificial restraints on its entry. Accounting controls would be sufficient to identify costs with services. Fully separated subsidiaries would be appropriate in the event Congress enacts new legislation requiring their creation.

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"Retarding technological advance" is a non-issue, since the presence of competition will maintain the flow of innovation. The Commission should allow the entry of all financially qualified parties, wireline carriers and others.

Whatever rules the Commission adopts regarding the number of carriers in a market should ensure the systems are all compatible, so that if one licensee goes out of business its customers will be able to convert to another supplier at minimum cost.

CWA urges the Commission to permit licensees to manufacture, supply, and maintain equipment, with both tariffed and non-tariffed offerings permitted. Allowing carriers and affiliated companies to manufacture equipment on a competitive basis would provide an incentive to use technological knowledge, increase consumer choice, and help maintain American jobs. CWA takes issue with the proposal to require cellular licensees that design or manufacture equipment to license their technology at reasonable fees, because a developer should have the advantage of realizing an appropriate return on investment, including research and development. CWA asks further that the Commission take steps to insure that foreign-made equipment not be certificated unless proper royalties have been paid.

COMSAT General Corporation (Comsat General)

Comsat General, provider of maritime satellite service via the MARISAT system, submits that no action should be taken in this proceeding that would prejudice or preclude the future use of a mobile-satellite service in the band 806-890 MHz.

Continental Telephone Corporation (Continental)

Continental believes that cellular systems should rapidly replace conventional public mobile telephone service, but that cellular systems will become a logical and economical alternative to wireline service only in areas of low customer density, where the cost of providing physical access is high, rather than in urban areas. Continental supports the Commission's efforts to foster competition in supplying cellular service. While the Commission should permit up to two primary suppliers in each market, the marketplace itself should be the arbiter of how many carriers can be accommodated in any area. Minimum standards should be established regarding applicants' technical experience, financial qualifications, and ability to bring a system into operation rapidly; these standards should be graduated by market size.

Continental believes that any potential operator, whether a wireline or radio common carrier, should be eligible for a license if it meets the minimum qualifications. Wireline carriers will be unlikely to restrict the development of cellular systems and in fact have an economic incentive to develop cellular systems, which will be complementary to other wireline services. There should be no restriction on the number of cellular licenses one entity can hold nationwide, as that would unjustly penalize carriers serving many small rural communities. Furthermore, Continental opposes a separate subsidiary requirement for smaller carriers in rural areas.

Continental supports maximum competition in the provision of equipment and services, whether by carriers or equipment vendors. The Commission should preserve the possibilities of resale of cellular service. It should also specifically provide for joint operation of a cellular system by two or more carriers.

Continental supports Commission establishment of technical standards through federal preemption; it believes that concurrent state and federal jurisdiction should be maintained over entry, rates, and quality of service. Selection of competing applicants should not be based on a lottery or auction, but rather on comparative criteria; Continental agrees with some of the Commission's suggestions for streamlining the comparative hearing process.

Continental urges the Commission to dedicate the 20 MHz of reserve spectrum to cellular systems; of the 60 MHz of cellular spectrum, 20 MHz should be initially assigned

to a carrier, with an additional 10 MHz to be available when needed for expansion. Finally, the Commission should allocate additional spectrum for the development of innovative cellular technologies.

Council on Wage and Price Stability (COWPS)

COWPS believes the most efficient mechanism for allocating spectrum between competing applicants would be an auction. If the Commission does not have the legal authority to conduct an auction, COWPS suggests that the Commission should achieve similar results by dividing the spectrum among all qualified applicants and allowing spectrum rights to be freely exchanged. In order to prevent distortion of the market for cellular spectrum under this approach, the Commission should virtually guarantee the license renewal of existing carriers.

The 40 MHz now specifically allocated for cellular services should be allocated more broadly so that alternative technologies are not foreclosed. Furthermore, the Commission's rules should permit the market to determine the level of service quality provided by cellular systems. Restrictions on the technology that can be used are especially inappropriate in smaller markets, where small non-cellular systems may be more efficient than cellular.

Participation by wireline carriers in the market for cellular services should be limited; the Commission should limit the number of cellular systems a wireline carrier may operate in markets where it also offers wireline service. Dominant wireline carriers should also be required to establish fully separated subsidiaries for cellular service. Such restrictions are advisable because if wireline carriers were to play a dominant role in the provision of cellular services, possible competition between the cellular and wireline technologies might be inhibited.

COWPS recommends that at this time the 20 MHz of reserve spectrum should remain in reserve in order to provide opportunities for new entry.

The supply and maintenance of mobile equipment by carriers should be permitted, and mobile equipment should be unbundled from transmission service and offered on an unregulated basis. Cellular carriers should be permitted to manufacture mobile equipment, but a dominant wireline carrier should be permitted to do so only through a fully separated subsidiary. COWPS does not support the imposition of a requirement that cellular carriers sell or license their technology at reasonable fees.

COWPS states that the resale of cellular service should not be restricted or regulated, and that wireline carriers that both retail and wholesale cellular service should not be subject to additional structural requirements.

COWPS supports the FCC proposal to preempt state regulation of entry and technical standards; it believes that Commission should preempt these areas entirely rather than allow concurrent state and federal regulatory powers to exist.

E. F. Johnson Company (Johnson)

Johnson, a mobile equipment manufacturer, urges the Commission to make the necessary policy determinations for initiating commercial cellular service as soon as possible.

The effect of cellular mobile telephone on conventional private dispatch will be minimal if cellular is optimized for interconnected telephone service. Fleet-call dispatch should be prohibited as inefficient on cellular systems. Specialized Mobile Radio (trunked) systems are better suited for dispatch service. There is little likelihood that cellular systems will displace the wireline local distribution system.

Multiple fixed-plant systems in a market will not provide constructive competitive conditions and will only result in delays, increased costs, and risk of compromised performance. The Commission's proposed two system per market policy is likely to be

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unsuccessful. The prospect of the paying public supporting two or more installed systems, each of reduced efficiency, cannot be disguised as being in the public interest. The Commission's open entry alternative cannot be seriously considered responsible regulation. The cellular market would best be served by a regulated monopoly.

It would not be in the public interest to restrict wireline companies from the cellular market; their technological and financial strength justify their participation. There should be no limit on the number of systems operated by one entity, as such a rule might preclude some markets from obtaining service.

There may be merit in proscribing the manufacture of subscriber equipment by cellular system operators, in view of the Chicago developmental experience, in which there were several equipment suppliers. Johnson does not believe that the forced sale of technology by cellular licensees will be successful, however. Cellular operators should be permitted to supply and maintain mobile equipment on a tariffed basis, in order to insure the availability of equipment.

Johnson supports the concept of resale, which would result in competition at the retail level and in diversity of service. Separate entities for the wholesale and resale arms of a single carrier should not be required, however.

Johnson supports federal preemption in the interest of standardization. Accordingly, licensing and technical standards must be entirely under federal jurisdiction. Competing applications could be evaluated on the basis of a "financial and time bidding process" in which each applicant would propose a schedule for construction and operation, posting a deposit with the Commission as a bond against delays. The successful applicant would be the one with the best schedule and most convincing guarantee against delay.

With respect to technical standards, Johnson recommends that the Commission make industry groups, such as the Electronics Industry Association, responsible for detailed specifications. Advanced technology, such as digital techniques, can later be incorporated into a monopoly cellular system more easily than in a dual-system environment. Finally, Johnson states that it believes a 40 MHz allocation will be sufficient.

Land Mobile Communications Section, Communications Division, Electronic Industries Association (EIA)

The EIA has prepared a working paper on cellular compatibility standards (described in the text) as well as commented specifically in response to the Commission's NOI/NPRM. The group has undertaken to develop voluntary industry standards based on this working paper after the Commission has resolved the issues necessary for forming a compatibility specification.

The cellular system will not be a likely substitute for local exchange service in the foreseeable future because of its complex switching protocol and a traffic capacity that is limited by the number of channels available per cell-site.

The EIA states that the need for spectrum for cellular systems beyond the 40 MHz presently allocated cannot yet be justified, and it would therefore be premature to allocate additional spectrum. Furthermore, the spectrum efficiency of a cellular system, which is due to frequency re-use, would be reduced if fleet-call dispatch service were permitted, and the EIA therefore recommends against any change in the limitations on it.

Federal Emergency Management Agency (FEMA)

FEMA, an Executive agency, establishes policies for and coordinates all civil emergency planning, management, mitigation, and assistance functions of Executive agencies, and works with state governments in emergency preparedness matters. Its comments relate to its interest in improving emergency communications.

The critical dependence of the cellular system upon the public switched telephone

network (PSTN) is of concern because if the PSTN is inoperative in an emergency the communications capability of vehicles having cellular radios will be lost. It would be highly desirable, in the interest of population protection in emergencies, that the cellular system incorporate some of the disaster-resistant features of CB radio. This can be accomplished by incorporating one or two car-to-car channels in the cellular system. In addition it should be possible for vehicle owners to purchase radios incorporating only the car-to-car features.

FEMA supports the incorporation of digital communication techniques into cellular systems. Digital technology would facilitate record communication and privacy protection.

General Electric Company (GE)

The Commission's ultimate determinations in this proceeding will have far-reaching consequences for future land mobile telecommunications services. While GE is less than certain that cellular systems will provide the answers to all of the country's mobile communications needs, the successful development of an effective nationwide network of such systems will undoubtedly represent a major step forward.

Since it will have significant long-term implications, both for users and for entrepreneurs, however, the regulatory framework for the provision of cellular services must be carefully fashioned. Particular caution will be needed to avoid an inadvertent extension of agency regulation into marketplace areas competitive in nature, and to assure that any provision of cellular services by regulated wireline carriers does not have an anticompetitive effect in those unregulated markets.

Most fundamentally, the Commission must recognize that the manufacture, supply, and maintenance of equipment used in connection with cellular systems—both base station and mobile equipment—are activities which evidence no natural monopoly characteristics. Such activities are plainly competitive in nature, and should be affirmatively excluded from any Commission regulation. It is the offering of cellular services to which the Commission's regulatory supervision should be limited. Consistent with its approach in regard to terminal equipment, the Commission should restrict itself to establishing those minimum interface and operational standards necessary to assure compatibility both between cellular systems and the basic telephone network, and among cellular systems nationwide, leaving to the competitive marketplace the development and marketing of equipment which meets those standards.

With respect to licensing policies, the Commission must make certain vital structural determinations. First, to assure the most effective competition in system development and deployment, steps must be taken to avoid awarding any entity a dominance in the cellular field. If only two systems are to be permitted in any geographic area, all applicants for such facilities should have an equivalent opportunity to vie for the licenses involved, and no frequencies should be dedicated to any class of carrier. Moreover, limitations on the number and location of cellular systems licensed to any entity nationwide are required. GE suggests an initial restriction to five systems, no more than two of which may be located in the 20 largest urbanized areas.

Second, if wireline carriers are permitted to participate in cellular system operations, additional structural safeguards are needed to obviate potential anticompetitive effects. Such carriers should be required to offer cellular services through a "maximum separation" entity, and should not be permitted to operate cellular systems within their existing telephone exchange areas. Moreover, if wireline carriers are permitted to manufacture, supply or maintain base station or mobile equipment—none of which, GE believes, are necessary or appropriate carrier activities—a "maximum separation" of such activities from both basic wireline and cellular service provision should likewise be required.

GE believes the Commission should not allocate additional spectrum for cellular

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systems from the reserve bands at this time. To do so would preclude any expansion of current private dispatch services in the future. Furthermore, the possible channel requirements for synchronous satellite augmentation of terrestrial cellular systems must be taken into account in making allocations from the reserve bands. Since there is no present need to use those bands for cellular service, the Commission should not foreclose future opportunities by a premature allocation to cellular.

In respect to limitations on dispatch service by cellular systems, GE says that not only fleet-call but all dispatch communications should be prohibited, in view of the particular suitability of Specialized Mobile Radio systems for such services.

GE supports the Commission's proposal regarding resale of cellular service, agreeing that a framework should be established in which the marketplace will determine the role of resale. The regulation of resale should be based on the principles developed in the Second Computer Inquiry. GE also endorses FCC preemption of jurisdiction over entry certification.

Competing applications should be evaluated carefully to insure that cellular operations are qualified technically and financially. No applicant or class of applicants should be given a preference or head start that would give them a potentially insuperable lead.

GTE Service Corporation (GTE)

The Commission is wisely proceeding with policies to promote the development of cellular systems as the most promising avenue for meeting the demand for mobile telephone service. Cellular mobile radio service is a natural extension of wireline telephone service to mobile customers. This means that cellular service is complementary to the wireline network. At the same time, cellular service is, to some degree, substitutable for wireline distribution. Cellular systems will be directly competitive with non-cellular two-way mobile telephone services. In areas with a high demand for mobile telephone service, notably metropolitan areas, the systems presently available simply cannot meet the demand, in terms of quantity of customers and quality of service. This would be the case even if the Commission allocated more frequencies to present systems. As a frequency allocation scheme making reasonable allowance for mobile telephone and other services, cellular systems offer the best prospect of meeting this demand.

The proposal in the NOI/NPRM to license up to two carriers to provide cellular service in appropriate markets is practical, will stimulate competition, will promote efficient use of the frequency spectrum, and will bring cellular service to the consumer at an early date. The Commission should allocate discrete blocks of frequencies for exclusive use by, on the one hand, wireline carriers, and on the other hand, radio common carriers; no rules or policies should be adopted by the Commission which would, directly or indirectly, preclude active participation in this market by both wireline carriers and RCCs.

Wireline carriers should be able to compete in the provision of mobile equipment to their subscribers and the maintenance of that equipment; and they should have the option of offering such equipment to their subscribers on a tariffed or non-tariffed basis. Carriers, whether wireline or RCCs, should have the option of: (i) obtaining cellular service from any carrier furnishing it; and (ii) providing the service to subscribers on a resale basis—or on such other basis (e.g., joint through service) as may be negotiated and agreed by the carriers involved.

Any exercise of the Commission's preemptive powers should be done judiciously, without disturbing the proper application of regulation at the state level.

Expediting the comparative review process is best accomplished by clear, broad, and timely designation of matters to Administrative Law Judges. An auction or lottery process would not serve the public interest and is inconsistent with the Communications Act as it presently stands.

The rules adopted for cellular systems should not require greater sophistication in

design and equipment than is needed to meet current and foreseeable demand for a given area. However, regardless of how a carrier provides cellular service, the mobile unit interface compatibility standards must not be compromised.

Concerning release of the planned 20 MHz block of reserve spectrum, GTE agrees that the four factors outlined in the NOI/NPRM should form the basis for the Commission's eventual decision. As proposed, 20 MHz should be reserved for cellular systems; but this 20 MHz reserve should not be assigned until all alternative approaches are evaluated and cellular's growth potential is better known.

Harris Corporation (Harris)

Harris, an equipment manufacturer, urges the Commission to adopt rules that could permit at least one wireline and one non-wireline carrier to operate in each market; the same eligibility criteria would apply to both classes of carrier. The Commission should permit carriers to supply both equipment and service. Carriers should be prohibited from directly or indirectly manufacturing equipment, because of the potential for unfair purchasing practices.

Minimum technical criteria should be established to insure inter-system compatibility, and the general quality of service and character of system operation should be consistent from system to system. Transient mobiles should be assured access to service on any system. Technical standards should also be established regarding interference between adjacent and collocated cellular systems.

Single-cell systems should be permitted, but the Commission should establish criteria for determining when such systems are appropriate; they should be convertible to multiple-cell operation as their capacity grows.

Harris believes the Commission should continue to hold 20 MHz in reserve; it would be prudent to revisit this after cellular systems are more fully developed.

International Municipal Signal Association (IMSA)

IMSA, which represents users of the Fire Radio Service and coordinates their frequency usage, opposes the reallocation of any reserve frequencies for cellular service. The reserve was created to allow time for the development of new technologies and new requirements at 800 MHz.

If the Commission reallocates 20 MHz of reserve for cellular systems and provides 30 MHz exclusively for wireline carriers, as AT&T requests, it will do far more to stifle competition than to promote it. During the years that a multiplicity of non-wireline carriers compete for the right of one carrier to prevail, AT&T will have to itself the consumer market in the top seventy cities.

Jan David Jubon, P.E. (Jubon)

Jubon is an engineering consultant specializing in common carrier radio telecommunications systems and related wire telecommunications; he is working with Kidd's Communications, Inc., and RCC of Virginia, Inc. to develop small market cellular compatible systems. He believes that cellular service will compete primarily with existing common carrier two-way service and has little likelihood of replacing private two-way service, in view of the probable higher costs associated with cellular. The transition from conventional to cellular common carrier service will be more rapid in major cities than in smaller markets, which are more likely to await the establishment of an inter-city compatible cellular network. Wireline carriers operating mobile systems are likely to experience less transition activity than radio common carriers because the RCCs have heavier traffic loading, a lack of inter-city compatibility, and unfavorable telephone network interconnection provisions, when compared with the wireline carriers. Cellular service is unlikely to be at all cross-elastic with wire telephone exchange service, except, perhaps, in rural areas, due to its inherently higher cost in most areas.

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Jubon supports the Commission's proposal to license up to two carriers per market, but notes that there should be separate signaling channels for each carrier, in order to provide flexibility in system planning. This will require some provision in the mobile unit for user selection of which channel group is to be used. It also raises questions as to how calls to itinerant mobile units will be handled; he suggests that perhaps a single inward operator should direct calls to itinerants in either system in an area.

Eligibility for operating cellular systems should not be restricted to existing carriers; the market should be open to any applicant presenting a comprehensive technical plan for system operations and services that satisfy public needs. There should not be specific allocations for wireline and non-wireline carriers. Restrictions on the eligibility of wireline carriers to provide cellular service could stifle development of service in markets with few otherwise qualified service providers. Rather, there should be a limit on the number of major metropolitan markets any entity should be eligible to operate in, at least initially, to prevent a single entity from operating the systems in all major markets. Jubon proposes, therefore, that during the continuation of cellular development and for two years thereafter any single entity and its affiliates be limited to applying for authority in no more than 15 of the 100 largest Standard Metropolitan Statistical Areas. This would foster development in major markets by many entities yet open entry after a short time.

Subscriber equipment should be available from any vendor, including system licensees (though a separated business structure), under rental, lease, or purchase agreements, with or without the inclusion of maintenance service. These agreements should be subject to FCC review. Jubon opposes the provision of fleet-call dispatch service by cellular systems because of their inefficient use of the spectrum for such service, but does not believe this should preclude conference telephone calls involving a limited number of mobiles.

Jubon proposes that cellular service be offered through a two-tiered business structure which would minimize the potential for competitive abuses by large carriers and wireline telephone companies. Under this approach, switched services and radio frequency base stations would be provided by a cellular fixed-plant entity (CFPE). The CFPE would interconnect with the telephone network as a class 5 central office, with the relationship between the CFPE and telephone network to be based either on settlements and division of revenues or on an ENFIA-like tariff. The CFPE would not market its service directly to the public, but would instead market cellular services to distributors under a tariff. Distributors and equipment vendors would constitute the second tier of this business structure. Distributors would be fully separated business entities from the CFPEs; they would purchase service capacity from the CFPEs and resell the service to subscribers on a non-tariffed basis. In order to implement this business structure federal preemption may be necessary.

Jubon supports the concept of nationally standard, compatible 800 MHz mobile telephone service. There are elements of the existing cellular proposals that will require additional work, however, especially if small and medium markets are to be served. Accordingly, he recommends: adoption of the Bell/Motorola/EIA signaling format as an interim compatibility standard; open entry, on a developmental basis, for up to two carriers per market, with multiple-city implementation of any compatible system permitted; authorization of base station configurations with the ability to evolve into small-cell configurations; standardized numbering of 30 kHz channels; standardized compandor characteristics; and development of propagation data. He recommends against the prescription of any specific grade of service (blocking level), which should instead be determined by economic considerations.

Jubon supports the allocation of the 20 MHz of adjacent reserve frequencies for cellular systems. A 60 MHz allocation will provide 1000 channels. Applicants should be granted 15 MHz initially with additional blocks of 5 MHz as needed if cell size is sufficiently small. All vehicular mobile units should be designed with all-channel

capability; there may be justification for permitting limited-capacity portable units, however.

Jubon includes in his comments a number of specific suggestions for technical rules as well as a detailed proposal regarding cellular system interconnection hierarchy and revenue distribution. He also notes that digital voice transmission techniques are not yet at a stage where they would provide an advantage over compandored frequency modulation.

Kidd's Communications, Inc. (Kidd)

Kidd is a California radio common carrier that has applied for authority to construct a developmental cellular-compatible system. It supports the move to regularize cellular service but suggests that the Commission continue to authorize developmental systems to acquire more information, particularly about the application of cellular technology to small and medium markets. The frequency re-use and cell-to-cell handoff used in the existing cellular developmental systems require expensive technology that may not be justified in smaller markets, as the Commission has recognized. Variations on cellular technology should continue to be developed. To this end, the Commission should encourage further developmental proposals.

Kokusai Electric Company of America (Kokusai)

Kokusai is a manufacturer of telecommunications equipment and a supplier for the Japanese cellular system.

The Commission should license two, and perhaps more, cellular systems in any area; Kokusai does not support unlimited entry into the cellular underlying-carrier market, however. The availability of two underlying carriers and an unrestricted resale market will lead to substantial benefits for consumers through competition.

There should be no restriction on the provision of cellular service by wireline carriers, because such restrictions would unduly reduce the pool of potential cellular licensees and thereby reduce service options. Similarly, there should be no limitation on the number of authorizations held by a single entity. Kokusai supports a continued ban on the manufacture of mobile and base station equipment by cellular licensees, because in the absence of such a proscription it is likely that monopolization of the equipment market would occur through anticompetitive actions by dominant communications companies or manufacturers. Cellular operators should be required to license at reasonable fees any cellular technology they may design, develop, or manufacture; this would encourage nationwide compatibility and availability at reasonable cost.

Kokusai supports federal preemption of state jurisdiction over entry certification. It also supports the use of an expedited selection process for competing applications by qualified applicants.

Kokusai supports the design concepts set forth in the NOI/NPRM. It opposes the use of mobile units not capable of operating on all channels, and it also opposes the use of cellular systems for fleet-call dispatch service. An additional allocation of 20 MHz should be made from the reserve spectrum for cellular service in order to provide sufficient spectrum for the growth of the cellular market, which is likely to expand due to recent advances in miniaturization of solid state devices. It may be desirable to dedicate this additional allocation for developmental use, to test digital and other new technologies.

LIN Broadcasting Corporation (LIN)

LIN is the parent of radio common carrier and broadcast subsidiaries in numerous markets. It believes cellular technology represents the best means for satisfying greatly expanding consumer demands for mobile communications services in the foreseeable future, with minimum demand on scarce spectrum. Companies such as LIN have the right combination of financial stability, experience, and entrepreneurial incentive to

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bring meaningful competition to the cellular marketplace. The Commission's goals—to provide cellular service on a competitive basis and to provide it at the earliest practicable date—can best be achieved through the use of high standards for licensee qualifications, selection of two system operators in any area from among the qualified applicants by lottery, and requiring those operators to construct and initially operate the cellular system as a joint venture. Once the system has been placed in operation the Commission would make a determination whether the market is capable of supporting two competing systems; if so, the joint operation would be terminated and the parties would operate as competitors.

Such a structure for cellular operations is necessary to attract companies such as LIN, with the financial resources needed for establishing a cellular facility, into a capital-intensive business in competition with AT&T; an undertaking of this magnitude could only be cost-justified if an adequate return on investment could reasonably be expected. It will be essential, if other entities are to compete with AT&T, for the Commission to establish a regulatory structure that will foster the development of a competitive potential prior to unleashing AT&T as a competitive participant in the market. While this could be accomplished by excluding AT&T from the cellular market or limiting its role (as the FCC has done in other fields), the correct structuring of the market would render such restrictions unnecessary.

The participants in these joint ventures should be required to disclose and make available technical data, customer lists, and other information that would be necessary and desirable for the success of the operation. If wireline carriers are involved, they should be required to participate only through a fully separated entity; dealing between the cellular licensee and the wireline carrier should be at arms' length.

LIN believes that cellular applicants should be required to demonstrate, by pleading or amendment, that they are able to meet stringent qualifications standards; the Commission could resolve factual disputes on both qualifications and comparative issues on the basis of the pleadings; and selection of licensees from the pool of applicants remaining could be on the basis of a lottery. The qualifications of the applicants should be decided on the basis of price and nature of service, staffing and marketing plans, time for initiation of services, financial resources, and experience in providing common carrier service.

Metrocom, Inc. (Metrocom)

Metrocom is a Specialized Mobile Radio system operator. It commends the Commission's policy of limiting equipment manufacturers to ownership of one SMR system, in order to prevent the near-monopolization of the SMR market. Yet Metrocom is concerned that the Commission may permit telephone companies to enter into the private dispatch market and compete with SMRs.

The decision of Metrocom and other small businesses to enter the SMR market was based on the belief that the Commission had, in Docket 18262, intended for cellular systems to provide mobile telephone, not dispatch (including fleet-call), service. Metrocom is concerned about the Commission's proposal to permit any type of dispatch service on cellular systems. This would have a profound negative effect on SMR systems in areas where cellular systems provide dispatch service.

Metro Mobile Communications, Inc. (Metro Mobile)

Metro Mobile is the operator of several Specialized Mobile Radio systems. It urges the Commission not to permit cellular systems to provide dispatch service. Cellular systems, because of their capacity, will be able to handle a large proportion of the dispatch service in smaller cities in particular. Given the spectrum efficiency of the cellular system and the probability that large wireline carriers will be able to cross-subsidize cellular service from the provision of non-competitive services, it is unlikely that trunked and conventional SMR operators will be able to compete effectively for dispatch business.

Millicom Inc. (Millicom)

Millicom, a newly formed corporation, is working to develop a cellular system using a small, lightweight, portable handheld telephone. It has filed an application for a developmental cellular system in Raleigh-Durham, North Carolina. Millicom believes the Commission's rules for cellular systems must be flexible enough to foster competitive development of technology; therefore specific technical criteria should not be adopted.

Millicom believes the cellular system will be a full-fledged competitor to landline telephone service in all but major downtown urban areas, where cellular will be an expensive mobile radiotelephone service. Cellular will be able to provide auxiliary services such as stock quotations, meter reading, videotext and emergency alarms. In addition, compatible cellular equipment will foster lower system cost. Furthermore, lower cost will be achieved if only one cellular system is authorized per market.

Millicom takes exception to the assertion by Kidd's Communications that full-scale cellular service is not viable in smaller markets. Because the cellular switch need not be collocated with the system, switch capacity may be shared. This will save expense. Additionally, Millicom argues that frequency hand-off and re-use is necessary even if only a single cell is being served.

Millicom argues that two 20 MHz systems within a market would be spectrally inefficient, afford less channel availability, and diminish the ability of cellular to compete with those services for which it is a substitute. The compensating gains in competition might be reasonable if the market were found to be cellular service. However, if the market includes basic telephone service, there are already adequate available substitutes. Furthermore, a cellular subscriber might access carriers outside his market area for services.

Millicom proposes a plan for licensing under which construction permits for 40 MHz systems would be granted to all applicants, but only the first party to complete construction would be granted a license, unless the permittees were able to agree on a shared system. After the initial three year license period, Millicom proposes a policy of open entry, permitting shared use of radio channels and access to centrally coordinated channel-assignment information. New entrants would not have the right to share facilities, but sharing facilities would be permitted.

Millicom favors exclusion of wireline carriers within their exchange areas because these carriers will have incentives to limit cellular uses to services not competitive with exchange telephone service; exclusion would eliminate incentives to cross-subsidize and would deter discrimination in interconnection arrangements between wireline and non-wireline cellular systems. If wireline carriers do operate cellular systems, they should do so through a separate subsidiary, although such an arrangement would only reduce, not eliminate, anticompetitive incentives. Millicom does recognize that special circumstances in rural areas may justify telephone company operation in these areas. In addition, Millicom would preclude equipment manufacturers from owning systems for the initial period so as not to restrict competition in equipment supply. Manufacturers, if allowed to provide equipment, should do so through a separate subsidiary. The Commission should not limit the number of cellular systems an entrant may operate at this time.

Millicom urges the Commission to adopt only interface standards, but not to specify how services are provided. This will foster competitive equipment supply and development. In addition, equipment should be offered on a tariff or non-tariff basis, depending upon the wishes of the subscriber. Fleet-call dispatch, which is inefficient in cellular design, should be precluded.

Millicom believes that resale should be allowed under the same corporate structure as cellular service. Whoever is allowed to compete for a cellular license should be eligible to resell service.

To assure a uniform nationwide service, FCC preemption of jurisdiction over entry and

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technical standards is necessary. Contrary state action would reduce the possibility of quick availability of the service. The Courts have previously affirmed similar preemption by the FCC of state jurisdiction.

Comparative hearings are unnecessary under the licensing approach proposed by Millicom.

Millicom supports the NOI/NPRM proposal to adopt technical standards which are the minimum necessary to attain compatibility. The AT&T and EIA detailed technical proposals should not be considered at this time. Millicom does believe that 25 kHz channel spacing is feasible and should be encouraged. More specific design standards are appropriate when systems become operational, but not at this time. The Illinois Bell system is but one of many different ways in which service can be offered.

The present 40 MHz allocation should be maintained. To increase the allocation in accordance with AT&T's proposal would create substantial delays because of industry opposition. The allocation of additional spectrum would foster inefficient spectrum use.

The AT&T proposal for separate wireline and non-wireline allocations would encourage future court challenges. It also appears to be based on a concern for maximizing AT&T's flexibility in the future by means of an undisturbed, separately allocated stockpile of frequency allocations. The 1949 allocation, in which the separate allocations were established, was made to ensure the viability of the non-wireline competitors, not the telephone companies. If the AT&T proposal is adopted, the wireline carriers would gain an advantage which would enable them to establish a dominant market position in the provision of cellular services. As a result, similarly situated entities would not be treated equally.

The marketplace should determine the feasibility of using digital technology in cellular systems. The Commission should accordingly refrain from adopting rules for digital systems; flexible standards will permit digital development. If compatibility is maintained, digital and analog technologies can coexist.

Motorola, Inc. (Motorola)

Motorola has been an active participant in the development of cellular mobile radio. It is the designer and supplier for the developmental cellular system of American Radio Telephone Service in the Baltimore/Washington area; it has also supplied mobile equipment for the AT&T developmental system in Chicago. Motorola is also a supplier of a broad range of equipment for private radio systems. Motorola asks the Commission to foster the growth of both private dispatch and cellular services to optimize their respective abilities to meet the diverse communications needs of the country. Motorola emphasizes its belief that the preponderant use of radiotelephones in cellular systems will be portable, hand-held units.

The Commission allocated spectrum for cellular systems for the purpose of satisfying a demonstrated public need for a nationwide mobile and portable telephone system. The purpose of cellular systems is not to provide an alternative to wireline exchange service. In most markets cellular systems would not be a viable substitute for wireline service because of their more limited capacity and their higher cost. Motorola also opposes allowing cellular systems to compete in the market for dispatch and fleet-call (or conference call) service. Fleet calling can be much more efficiently accomplished on private radio systems; on a cellular system, fleet calls would result in substantial spectrum inefficiencies and reduced quality of service. Dispatch service (other than fleet-call) should not be permitted on cellular systems because private dispatch systems are continually growing, making highly efficient use of the spectrum, and are highly competitive; there are also engineering problems in combining dispatch and mobile telephone conversations in one system.

Motorola believes the total amount of spectrum required for cellular systems is no more than 19 MHz. A 19 MHz system would be able to handle the projected demand in even

the largest cities through the end of this century. A larger allocation may reduce the cost of service slightly (but would increase the cost of mobile units), but the additional spectrum would benefit the public more productively if used in other ways. Only enough spectrum should be allocated for cellular systems as is needed to meet foreseeable demands.

For projecting the cost of cellular systems based on various assumptions, Motorola has developed several computer programs. Motorola concludes that when the cost of subscriber equipment is included, a 19 or 20 MHz allocation results in lower cost. In most markets, less than 20 MHz will be required.

Motorola believes only a single carrier should be licensed to provide cellular service in each market, properly regulated to protect against anticompetitive activities. A one-to-a-market policy would make more efficient use of the spectrum: a single 20 MHz system is more efficient than two such systems and occupies half the spectrum, while two 10 MHz systems would be substantially more expensive to operate. Furthermore, litigation will be decreased once a successful applicant is licensed. Motorola also states that if there were two systems in a market, one operator may be tempted to seek a less expensive system approach or offer alternative services such as private dispatch, in order to improve its competitive position; the best way to curb such temptation is to authorize only one system per market.

Motorola says the Commission should seek the highest practical degree of competitiveness, but care must be taken that a mere illusion of competition does not result in higher costs to the public and delayed service offerings, with no attendant compensation. Significant competition to benefit the end user exists predominantly in the sale or lease of the mobile and portable equipment, in the sale of base stations, and in the maintenance and installation of equipment. Therefore, to assure this competition, no cellular operator should be permitted to manufacture, sell, lease, or maintain mobile, portable, base station, or switching equipment.

Motorola opposes a policy that would permit resale of cellular service. It believes the existence of resale is effective only in removing a dominant carrier's incentive to cross-subsidize among substitutable services. Yet cellular is not likely to be readily substitutable for other services of a monopoly carrier, so resale is not likely to be viable. While requiring the resale of cellular service would be ineffective rather than pernicious, Motorola fears that the Commission may rely on resale in lieu of other regulatory controls.

Motorola describes the technical standards it feels the Commission must specify for cellular systems. It recognizes that all systems would not be configured exactly alike, and that diversity is healthy and ought to be encouraged. However, the Commission should establish certain criteria which all systems must meet to assure nationwide compatibility, allocations that match the market to be served, re-use of spectrum, and retention of quality of service at each phase of system development.

Motorola urges the Commission to require all cellular systems, under the concept of nationwide compatibility, to be able to serve portable units. Nationwide compatibility should also include an obligation to serve mobile telephone, as opposed to dispatch, communication needs.

Applicants should be required to specify and justify their spectrum requirements, based on present and future market conditions. Additional spectrum from within the 19 MHz total allocation should be available only after cell splitting; the question of whether to award more spectrum or require additional cell-splitting is a factual question for the Commission to decide based on considerations of efficiency, cost, and quality.

Motorola believes the Commission should establish minimum service quality standards that applicants would have to meet. Technical standards to limit cell-site coverage area should also be adopted.

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